

PROFESSIONAL PAPER

Operational Risk – Challenges for Banking IndustryKnežević Marija¹, Procredit Bank, Belgrade, Serbia

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ABSTRACT – Operational risk covers wide range of events that either produce no effect on financial result of the institution or can strongly harm it. Although it is present in the banking activity from its origins, industry interest increases during last decades of XX century. Basel II gave significant incentives in managing operational risk processes in banks all over the world. New, Basel III regulation imposes improvement in operational risk management indirectly, through guidelines for better management of liquidity and credit risk, thus emphasizing the importance of the most intangible factors of operational risk – internal factor contained in inadequate processes and procedures. In Serbian banking system the most important contribution of Basel standard implementation was raising awareness of the presence of this kind of risk, although it is still in the initial phase. High impact on the operational risk drivers has macroeconomic environment, banking system structure and client type that are offered financial support. Having in mind that banks offers in Serbia are primarily oriented toward retail clients, it is not surprising that the most important factor of operational risk, regarding number of risk events, are human errors with 54% in total. However, majority of financial losses are derived from clients' frauds, more than 70%. In this paper, author indicates the most important factors and events of operational risk that are present in retail banks in Serbia and their sources as a key element in mitigating their negative effects in the future.

KEY WORDS: operational risk, Basel regulation, banking sector, operational risk factors, operational risk events, internal processes, frauds, human errors.

Introduction

Among numerous financial risks that are inherent to the banking activity, special place belongs to operational risk. Its uniqueness comes not only from the fact that it follows every banking transaction from the beginning to the end, but also due to its fluid form and interconnections with other risks. It is quite often hard to make distinction between credit or market risk and operational risk on the other hand. However, industry interest in this matter emerged after several big losses that occurred in the late years of XX century. Most of these cases were originated by internal frauds or inadequate process and procedures which encouraged employees to involve in activities that exposed banks to higher risk in order to achieve personal gains. One of the latest operational risk events is certainly LIBOR fraud case that was discovered in the summer 2012 which could be also treated as the biggest scandal in banking industry! Banks, that are members of the committee in charge of determination LIBOR (one of the most important interest rates in finance) on a daily basis, reported

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incorrect data on interest rates they offer money to each other in order to present their financial situation more healthier, especially in period of crisis. These fraud activities of banks lasted six years with senior management involvement. Having in mind worth of loans and contracts linked to LIBOR, it is estimated that clients around the world were damaged with 1.5 trillion USD! After revealing scandal, crime investigations were opened and are still in progress. Up to now, Barclay bank was fined with 450 million USD, and Swiss based UBS bank with 1.5 billion USD for manipulating with LIBOR.

Recognizing importance of operational risk for modern banking, Basel committee for banking supervision (through Basel II and III), gave significant incentives in managing operational risk processes in banks all over the world. In Serbia the most important contribution of Basel standard implementation was raising awareness of the presence of this kind of risk, although it is still in the initial phase. Operational risk management is still in initial phase and the purpose of the paper is to identify the main drivers of operational risk that domestic banks are faced with. The paper is organized as follows: the first Section gives general characteristics of operational risk, Section 2 analyze the most important and potential factors of operational risk in Serbia, and Section 3 concludes.

Main characteristics of operational risk

Definitions of operational risk goes from the broadest that describe it as all risks that are not originated by market or credit risk to the most used Basel II definition. According to it, operational risk is the *risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk* (Basel Committee on Banking Supervision, 2006). By this, all major drivers of operational risk are covered. *People* (human factor) can produce operational risk events through unintentional errors during work, criminal activities, insufficient training or number of employees, and bad management. *External events*, as a source of operational risk, comprise numerous events that result in physical damages on the bank property such as natural disasters (earthquakes, floods, volcanoes etc.) or catastrophes like wars, robberies or losses incurred by third parties. Risk events that are connected with *IT system* are relatively easy to detect although they vary from hardware malfunctioning to abuses of databases. The most difficult to identify and detect are potential operational risks embodied into *internal processes and procedures*. Unlike other mentioned major operational risk drivers, weaknesses of internal processes are still in a way ignored. All improvements in managing operational risk are mostly connected with countable and easily detected events. Internal processes weaknesses are less noticeable and strong commitment and willingness of management is required to recognize them and later on to solve. Special challenge regarding this type of risk driver is to recognize weaknesses that results from **moral hazard** problem and some authors propose changes in definition of operational risk in order to include it as integral part (Savic Ana, 2012, 18). Moral hazard is the consequence of existing information asymmetry on the financial markets. It occurs when the lender is subjected to the hazard in which the borrower has an incentive to engage in activities that are undesirable (immoral) from the lender's point of view, that is, activities that make it less likely that the loan will be repaid (Mishkin Frederic S. 2006). Special type of moral hazard risk is principal agent problem which occurs because managers (agents) have more information about investments than principals

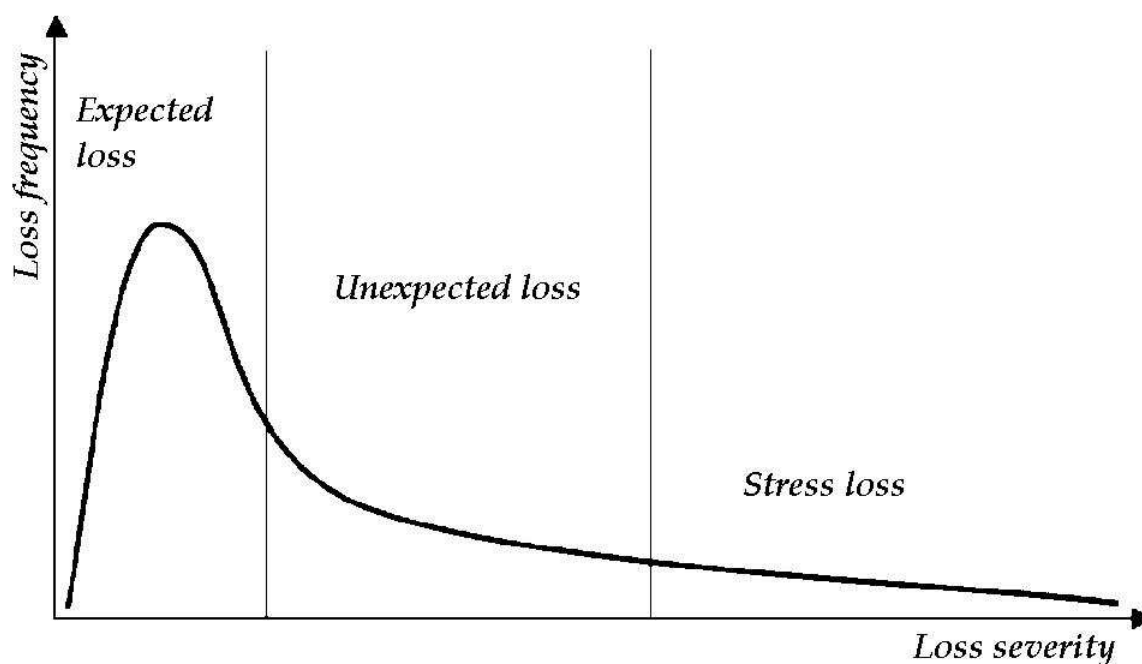
(owners) so they could have incentives to engage in activities that are not desirable for owners and expose the firm to the higher risk in order to make more profit and personal gains through bonuses for example.

There are large number of examples how moral hazard can produce operational risk losses. Financial crisis that hit the world in 2008 is the most viable example of that. Managers greed for bonuses and profits in large banks that faced biggest problems, led to enormous losses. Above mentioned LIBOR scandal also could be regarded as risk event that are coming from moral hazard. Still, the question remains would it be possible and feasible for banking management to recognize and admit it. Moral hazard, as a source of operational risk is not inherent only to internal processes but it is also source of the risk in events derived from people or externally.

For managing operational risk of crucial importance is the fact that risk events originated by people, inadequate internal processes or IT system are controllable because they occur within the bank, whereas those coming from external events are not. That is why it is hard to find appropriate strategy to mitigate them.

Main characteristic of operational risk losses and events is that their frequency and severity are disproportional, which means that events that bear high, severe loss occur very rarely in the life cycle of the bank. In contrast, events that occur with high frequency usually do not produce big losses. These two dimensions of the risk – frequency and severity are key elements that influence its treatment and produce problems for bank management because it is difficult to translate them into risk projections. Due to that, loss distribution curve is specific, i.e. it has fat tails, indicating that frequency of high severe risk events is small.

Figure 1. Loss Distribution of Operational Loss Events



Source: Österreichische Nationalbank (2006:14)

For events that occur quite often it is possible to calculate and project potential loss, which is then treated as expected loss and some loss reserves could be formed. On the other hand, unexpected losses refer to events that could not be anticipated as they did not occur within bank in respective period of time, so bank is supposed to have enough capital to cover them. In case of occurring events that produce catastrophic losses it is possible that bank could not survive them. Depending on the combination of loss frequency and severity, bank opts for one of the strategies to manage the risk. In case of low frequency, low severity events, banks would usually choose to bear the risk; dealing with high frequency low severity risks assumes proactive risk management actions in order to mitigate its consequence; in contrast, negative effect of low frequency, high severity risks could be mitigated using insurance plans.

Figure 2. Matrix on Operational Risk Management as a Function of Impact potential and Frequency of the Related Events



Source: Österreichische Nationalbank (2006:15)

However, there could not be unique strategies applicable to all banks as operational risk is bank specific, which requires understanding of main drivers that create operational risk profiles.

Undoubtedly, operational risk is present in all products and services that banks offer, in all internal processes and it could be caused by all employees within bank. In contrast to other business risks, bank is exposed to operational risk in every moment and in every phase of any process from its beginning to its end. That is why operational risk area is broader than area of other business risks. Main differences from credit and market risk are:

- Majority of losses are specific for the certain bank;
- Higher risk exposure do not assume higher profit but conversely;



- Exposure to operational risk do not depend on value and volume of transactions or bank portfolio which makes diversification poor technique for risk mitigation;
- Development of sophisticated hedging instruments for credit and market risk contributed to higher exposure to operational risk;
- Operational risk exposure are immanent not only to banks but as well to other market participants;
- Measurement and managing techniques for operational risk are less developed than for credit and market risk.

Multidimensional nature of operational risk emphasizes necessity of constant improvements risk management techniques because it allows:

- Early detection of potential problems before their escalation. In that way, it is possible not only to lower loss, but also, to save resources that could be redirected on business volume increase;
- Enhance quality of capital allocation;
- More efficient strategic decision making process because management of the bank is informed about business segment that bear the highest risk;
- Higher profitability and stability of doing business.

Recognizing importance of operational risk for modern banking and financial systems, Basel committee included in Basel II Capital accord capital charge for it. Basel II gave strong contribution for improving risk management function – primarily by standardization of definition, proposing guidelines for loss data collection, introducing methods for calculating minimum capital. New, Basel III regulation imposes improvement in operational risk management indirectly, through guidelines for better management of liquidity and credit risk, thus emphasizing the importance of the most intangible factors of operational risk – internal factor contained in inadequate processes and procedures. After escalation of financial crisis in 2008, it turned out that one of the most important sources of turmoil was *insufficient liquidity* for covering systemic risk derived from extreme credit losses. Capital level in banks that suffered the most was not enough to absorb all potential losses which indicated that risk management process in most of the banks was inadequate (Basel Committee on Banking Supervision. 2009). That is why all changes that are implemented in Basel III could be regarded as an attempt to improve internal processes (which are one of the sources of operational risk) that consequently leads to the enhancement in operational risk management. It stresses importance of enhancement risk management function within banks with more active involvement of senior management. By changes in credit risk weights used in internal models and introduction of minimum standards for adequate liquidity level through two new ratios, liquidity coverage ratio and net stable funding ratio, once again failures in internal processes before crisis are confirmed. Implementation of new standard should result in lowering operational risk.

Main drivers of operational risk in Serbia

Management of operational risk in Serbia is relatively new discipline. First time it was defined by Law on banks in 2006, when banks were obliged to form data bases for collecting operational risk events. That was the first step in the process of Basel II implementation. It

was the regulation that gave the most important contribution for raising awareness of the importance of managing operational risk. Basel II implementation in 2012 resulted in numerous benefits for the whole banking sector. The most important of them are:

- Standardization of the operational risk definition;
- Standardization of risk events and losses collection on banking system level;
- Development of monitoring system;
- Development of operational risk management process within banks;
- Basis for implementation of complex quantitative techniques for managing operational risk.

Still, the process of managing operational risk is in initial phase and there is a lot of work to do in the future in its improvement.

Analyzing operational risk drivers in Serbia assumes that macroeconomic situation and overall business climate should be taken into account as they impose most common risk events. Higher level of corruption, weak legal system, and high unemployment rate positively contributes to realization of some risk event such as clients' frauds and forgeries. That indicates that most of threats for the banks are coming from external events.

Period of pre-crisis expansion in Serbian banking system (from 2001 to 2008) additionally exposed banks to new operational risk threats. Multiple increases of placements and assets, development of new products, rise in employees' number and organizational units accompanied with mergers and acquisitions was faster than improvement and adjustment of working process and procedures.

Prevailing operational risk events strongly depend on dominant client structure of the bank that on the other hand influences organizational structure, corporate culture and working processes of the institution. Majority clients in the banking system in Serbia are retail customers – households, private individuals, entrepreneurs and small businesses. According to the data of Association of Serbian banks, 97% of total clients within sector as of the end of 2012 are retail clients. Having in mind that banks are the most important participants on the financial market, operational risk losses either realized or potential can strongly harm the whole system. In the next section key factors of operational risk in retail business is discussed.

Key factors of operational risk inherent to retail banking

Offering financial services to retail clients differs from orientation on large corporate clients or investment banking. Specifics are following:

- Labor intensive business model which is demanded by large number of clients that proceeds transactions of relatively small amounts;
- High level of decentralized decision making process;
- Higher operational expenses (personnel and administrative) per product unit;
- Large outstanding number of loans and active accounts;
- Widespread branch network and
- Higher level of loan portfolio diversification.

Every working process in retail segment is labor intensive, especially in loan activity. Credit analyses rely not only on official financial data of the client, but also on soft

information that clients confine to loan officers. That, on the other hand, requires adequate number of employees and branch network to serve all potential clients and build up strong relations with clients which at the end results in wide range of threats and challenges from operational risk stand point from all defined sources – people, processes and external events.

People as a source of operational risk

Retail banks on average have more employees than large corporate banks. Main characteristics of operational risk events that are driven from employees' behaviour or their work in retail banking are following:

- Higher possibility of **unintentional errors** caused by overtime or tiredness due to the large number of everyday transactions, in order to serve large number of clients, During the period of expansion, accompanied with growing number of employees, risk of insufficient training of employees and consequently higher percentage of accidental errors increases. According to the proposed Basel II matrix, which is adopted by National bank of Serbia, this type of risk event would be categorized as execution, delivery & process management, within business line Retail banking, originated by human factor.
- **Inadequate level of control** large amount of transactions as it requires high expenses, which can open a room for internal frauds, but also for unintentional errors or failure to meet a professional obligation.
- **Internal thefts and frauds** due to high level of *decentralization in decision making process* which is in high correlation with moral hazard risk. Business model and working process with this specific client segment - basing credit analyses sometimes on informal income sources, lack of verified documentation, but also insufficient control of employees from higher management contribute to higher risk. Financial reports of retail business are not audited so it is easier for responsible employees to forge them. This could be also treated as moral hazard problem. It would be 'higher' if there is a bonus system based on individual productivity of employees and achieved performances of their organizational unit.

In order to mitigate this risk, empirical data shows that banks usually implement following:

- Determination of time intervals when number of orders reaches peaks;
- Determination of adequate number of employees for execution volume of transactions;
- Procedure implementation control;
- Individual productivity control;
- Promoting e-banking transactions.

One of the methods for mitigation risk of internal frauds is more strict internal controls which have benefits both for detecting internal as well as external frauds and forgeries from clients. It includes checking of credit documentation, client visits and rechecking their financial performances.

Moral hazard problem from the agency problem point of view could be partially mitigated through long-term promises and bonus systems for employees that during career

achieve required results. These suppose that employees within banks should anticipate some kind of long-term commitment with shareholders and the bank (Myerson Roger, 2012). Since long-term bonuses and fringe benefits expectations are of crucial importance for motivation and behaviour in line with shareholders interest, investors' ability to trust them depends on long-term profit expectations.

Internal processes as a source of operational risk

It goes without saying that the most difficult driver of operational risk lies in internal processes and procedures. Operational risk inherent to internal processes and procedures is hard to distinguish from the risks that result from people because they actually create them! Failures and omissions in processes could be *unintentional* due to misunderstanding of process essence or *intentional* with the aim of acquiring more profit by exposing institution to higher risks which is the result of moral hazard.

In retail banking, the most important potential factors of operational risk from inadequate or failed internal processes are:

- Overlapping of responsibilities and fails within processes. Labor intensive business model assumes waste number of processes. If they are not set in adequate manner, overlapping of responsibilities or duties can occur which leads to inefficiency and omissions during work.
- Apart from unintentional failures, procedures can contain those that allow acquiring personal gains or expose bank to higher than accepted risk in order to achieve higher profit. These kinds of fails are more likely to exist if management bonus system is directly dependent on achieved profit in certain period of time. Here, we have moral hazard risk, in the form of principal agent problem.
- If procedures do not cover all aspects of the process, there is a possibility of breaches the responsibilities.

The biggest threat in internal processes comes from moral hazard problem, but still it is not identified in that manner. Apart from these, internal processes inadequateness could be present in other processes.

Systems of internal and external control are the first measure in mitigating risk inherent in bank processes. Contribution to it comes also from:

- Regular monitoring of bank management by shareholders, and monitoring of decentralized organizational structures from top management;
- Applying restrictive covenants. By this measure investors can define areas and projects that are prohibited for financing; set rules and conditions for loans disbursements, determine acceptable ratios of liquidity, solvency and loan portfolio quality. It is important that proscribed covenants do not include short-term profitability requirements, but the ones that support long-term sustainable stable business results of the institution. Profitability indicators directly support moral hazard problem. Faced with high profit targets, managers could be more prone to more risky activities in order to achieve personal gains.
- Existence of independent operational risk unit within the bank is of crucial importance for identifying these kinds of risks. Process of risk identification



should be more concentrated on analyzing these hidden risks instead of countable high frequency, low severity risk events.

External events as a factor of operational risk

External factors, as a source of operational risk are not under bank control. If we exclude catastrophic and events that cause physical damage on bank assets, in retail banking higher exposure to operational risk comes from:

- Higher possibilities of **clients' frauds and forgeries**. In the working environment characterized by high level of corruption, it is easier to forge documentation on clients' financial results as well as issuance of false certificates on their property.
- In entrepreneurial segment, **moral hazard** problem is more present in comparison to large enterprises. At the same time, entrepreneurs are managers and owners and entrepreneurial personal income is directly dependent on company's income. That is why there is a higher risk that entrepreneur would misuse borrowed funds from the bank and invest them in more risky ventures in order to maximize own fortune.
- Furthermore, entrepreneur tendency to misuse borrowed funds in order to increase own fortune is directly dependent on the companies financing choices [Wu Yan, 2008] and it is higher within those that finance their activity primarily using banking loans i.e. in finance structure have higher share of debt. Entrepreneurs follow the well-known economic principle that marginal benefits of effort should equal its marginal cost. Higher debt share in finance structure assumes lower marginal benefit of invested effort of the entrepreneur. That is why their motivation for further efforts is reduced and they are more prone either to misuse borrowed funds which mean that higher indebtedness increases **moral hazard risk** that on the other hand exposes bank to higher risk. In this case moral hazard problem is negatively correlated with chosen financing model.

In Serbia, most of entrepreneurs are financing their activity through banking loans. That is why this issue is important to risk management within banks. However, these risk factors are not under bank control. In order to mitigate these risks possible solutions could be:

- More strict control of used funds including visits to clients;
- Applying reporting covenants that oblige clients to report banks on used funds on regular basis;
- Applying restrictive covenants in case clients misuse borrowed funds for purposes other than agreed with the bank;
- Applying contract clauses that preserve value of collateral during the life time of the loan. In Serbia, for example, mortgage value is reestimated and adjusted to market conditions every 3 years. Beside that, majority of banks require collateral insurance during life time of the loan, which is additional security in case client do not repay the loan.

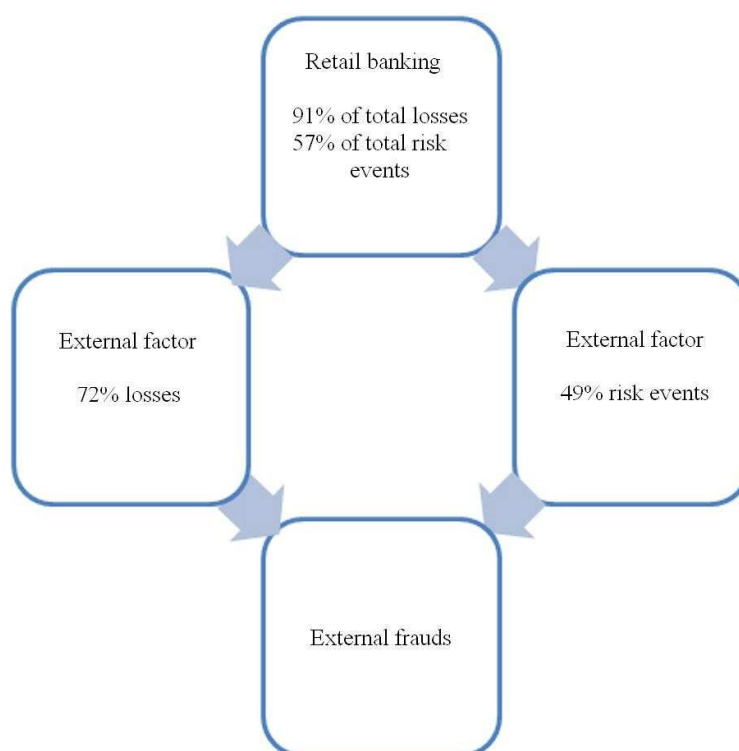
All these measures increase operational costs of the banks and consequently interest rates that clients pay, so again there is a tradeoff between risk and profit.

In the first two years of Basel II implementation and reporting on operational risk events, as it was expected in the beginning of the process, research on operational risk events has

shown that risk events are mainly driven by human factor (people) as 54% of total number of events is originated from it (Knezevic Marija, 2010, p. 101). The most common type of risk event is *unintentional errors* caused by *overwork and tiredness*. On the other hand, only 16% of total losses are derived from this source. Among business lines, payments and settlement line is the most exposed to negative effects of operational risk. In this line, 91% of risk events and 20% of realized losses are caused by unintentional errors. Typical risk event is *wrong data entry in processing client transactions*. These events usually do not result in loss because it is possible to recover payment order, which explains disproportion between number of events and losses volume. That is the example of risk event with high frequency and low severity. Moreover, it is countable and easily recognized, so it could be additional reason of domination in first phases of data collection.

In contrast to number of risk events, majority of realized and potential losses are coming from external factor – 81% of total and 43% of total risk events! Out of that, external frauds contribute with 70%. Business line *retail banking* is the line that is under strongest negative effect of external factor and generally operational risk.

Figure 3. Operational risk events and losses within Retail Banking business line



Source: Data taken from (Knezevic 2010)

In this line, 91% of all losses and 49% of all risk events have occurred. Majority of them (72%) are coming from external events, that is from frauds.

Thefts and frauds from clients in most cases are realized through **forged documentation** on their financial results in loan approval process. Common types of false documentation are



forged data on overestimated values on mortgages, false documentation on financial result of clients or false income statements.

Usually, risk event is discovered after certain period of time when client stop to repay loan instalments. Time lag between date of risk events and time of discovery vary between few months to several years, which make estimation of potential losses and application of sophisticated quantitative methods very hard and complex. These types of events reflect the real nature of operational risk events – that risk events cause financial effect with time lag, do not have regular intervals and that financial loss could be severe.

In retail banking there could be a lot of such cases with individually low amounts of loss. Although it can harm single institution it is not likely that it would in short period transfer the loss on the whole banking system. Problem for the sector arises when big clients with significant amount of debt at few banks commit such a fraud. In the worst case scenario this could lead to bank bankruptcy. Recently, several loss cases caused by clients' frauds were released with significant amounts of losses. We will mention some of them:

Group of clients, through ownership in related companies, from 2007 to 2012, have committed series of frauds and forgeries by which Hypo Bank experienced loss of 15 million CHF. During 2007, based on forged documentation on estimated value of collaterals, they received a loan for the purpose of privatization state companies. After privatization, through mutual trading and decreasing share values of privatized companies, indebted companies bankrupt. Hypo bank couldn't recover lendend funds and crime investigations against suspected is still in process.

The most striking operational risk event in last decade that occurred in Serbia is for sure case of Agrobanka, that bankrupt in 2012, with the loss of almost 300 million Eur. To its end led several events starting from forged documentation on mortgages and other collaterals, misusing of funds, weak procedures and internal controls, to the involvement of senior management in fraud activities in order to acquire personal gains (moral hazard). Investigations regarding these fraud cases are still in process. This event sharply unsettled financial market, but still it is the question whether it was recognized as a pure operational risk event that could be realized in any other institution.

Conclusion

In modern banking, operational risk remains one of the biggest challenges that whole industry is facing with, although it does not receive deserved attention. Banks are more concerned with rising credit risk caused with still present illiquidity in the system and unsettled market conditions characterized by high inflation, GDP growth stagnation, rising unemployment and sharp exchange rate fluctuations. It is sometimes hard to distinguish risk factors deriving from credit and operational risk as they are interconnected and that is why some risk events wrongly treated.

Management of operational risk is focused on easily countable and controllable, usually high frequency – low severity risk events and their sources (for example number of unintentional errors). Resources are directed to satisfy regulatory requirements – to collect risk events data and determine minimum capital. Regulation do have positive impact on improving risk management functions within banks, but itself is not enough to assure stable



and sound banking system as it cannot substitute importance of proactive risk management in the process of risk mitigation.

For the time being, the highest threats are coming from external events that are not controllable. However, single institutions cannot do much in mitigating these risks. In order to mitigate them, joint actions of all participants in the market are needed. One of the possible solutions could be exchange of risk events data between banks within the same system and forming so called black lists of clients. As banks are not reluctant to share in house information, of key importance is the role of regulator that could be kind of intermediary, at least in first phases.

The key question in front of banks managers is how to deal with operational risk in the future and how to recognize it among numerous risk events that occur every day? How to put stress on the most important ones hidden in the procedures and processes and motivated by moral hazard? First of all, it is imperative to admit and accept the fact that operational risk is one of the most important risks that institutions are facing with, not the residual. Then, redirect resources from countable, controllable and high frequency low severity losses on more sophisticated risk events. Enhancing internal models of risk management and independent risk units remain of crucial significance.

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Operativni rizik - izazovi za bankarski sektor

REZIME – Operativni rizik pokriva širok spektar događaja koji, ili ne daje nikakve efekte na finansijski rezultat, ili može jako da naškodi finansijskoj instituciji. Iako je prisutan u aktivnosti banaka od samog početka, interesovanje bankarskog sektora za operativni rizik je poraslo tek poslednjih decenija XX veka. Bazel 2 je dao značajne podsticaje u procesima upravljanja operativnim rizikom u bankama širom sveta. Bazel 3 uvodi napredak u indirektnom upravljanju operativnim rizikom, kroz smernice za bolje upravljanje likvidnošću i kreditnim rizikom, čime naglašava značaj najvažnijih faktora operativnog rizika - interni faktor u okviru neadekvatnih procesa i procedura. U bankarskom sistemu Srbije najveći doprinos implementaciji Bazelskih standarda je imalo podizanje svesti o prisustvu ove vrste rizika, iako je još uvek u početnoj fazi. Najveći uticaj na faktore rizika imaju makroekonomsko okruženje, struktura bankarskog sistema i vrsta klijenata kojima se pruža finansijska podrška. Imajući u vidu da su banke u Srbiji uglavnom orijentisane na sektor stanovništva, ne čudi da je najbitniji faktor operativnog rizika, uzimajući u obzir broj rizičnih događaja, ljudska greška sa 54%. Takođe, većina finansijskih gubitka su izazvani zbog prevara klijenata, više od 70%. U ovom radu autor ukazuje na najvažnije faktore i događaje operativnog rizika koji su prisutni u poslovima sa stanovništvom u Srbiji, kao i njihovih izvora kao ključnih elemenata u ublažavanju negativnih efekata u budućnosti.

KLJUČNE REČI: operativni rizik, Bazelska regulativa, bankarski sektor, faktori operativnog rizika, događaji operativnog rizika, unutrašnji procesi, prevare, ljudski greske

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